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ABSTRACT

This paper was presented as part of a symposium that dealt with several systematic research efforts that employed a specific methodology--the Structural Properties Questionnaire (SPQ)--as a measure of organizational structure in schools. The "subjects" in this study, 17 students in a class on organizational behavior, representing 14 different schools in 5 Utah school districts, were given instruction in structural analysis and were asked to describe their work organization in specific structural terms. The SPQ was administered to the teaching faculty in each of the subject's schools. Comparison of school descriptions provided by the class participants and by the SPQ revealed that, while there was some ability to recognize relative differences among specific factors, course participants were not consistently able to estimate structural levels. In general the class participants were poor judges of the state of structural affairs in their school organization. The results of this study would seem to suggest that administrators, left to their own means, are likely to misread the state of school organizational structure. It follows, then, that any design decisions that follow will be misguided. (Author/MLF)

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STRUCTURAL CHARACTERISTICS AND ORGANIZATIONAL DESIGN DECISIONS

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Structural characteristics of organizations are something like the weather. They are talked about a great deal but little seems to be done about them.

Despite a large theoretical and research literature on structure in formal organizations, school administrators seem rarely to focus their attention on structural properties or to give attention to them in deciding the type of organization they wish to manage. They seem to worry a good deal about the kind of classroom they wish teachers to operate but they think less critical, apparently, about the types of school organization which should be the setting for the instructional efforts. The lack of focus on structural properties in school organization design decisions may be caused by several things. It may be that little emphasis is given to the meaning of organizational structure in administrator training and hence there is little concern with it in practice. It may be that administrators have trouble identifying structural attributes in their schools; that their concepts lack operational specification. Or it may be that administrators do recognize structural variation on comparative basis, but are unable to estimate structural characteristics in their own organization with sufficient precision. Hence design interventions are misdirected by inaccurate diagnostic information.

In a somewhat simplistic way this paper focuses on these issues and addresses two major organizational questions:

1. Do administrators know the structural state of their school organization?
2. Can they interpret the meaning of these organizational states, e.g., use descriptions of their school organization to create strategic intervention programs?

In this study we sought to find out whether or not a group of graduate students in educational administration who aspired to administrative positions

or who held administrative positions on a provisional basis could, if sensitized to structural dimensions of organizations, accurately describe the state of their school organization in structural terms and, having obtained a structural description of their school organization could in fact define an appropriate structural type and devise a program for moving their organization toward that desired organizational state.

For the last 10 years the author, along with Julius R. George of the University of North Carolina and Lloyd K. Bishop of New York University, has worked to develop an instrument which would measure the structural properties of school organizations. (Murphy, Bishop and George, 1975) This paper discusses the use of that instrument, the Structural Properties Questionnaire (SPQ) as a tool for use in organizational diagnosis and design. The results and conclusions are drawn from a small scale, field study using the Structural Properties Questionnaire with administrators and teachers from northern Utah. It is not scientific in the usual sense. No systematic or random sample of participants was drawn. There is no particular design rigor. The data are in part impressionistic. Nonetheless, it represents an interesting attempt to build a bridge between a successful research instrument and requirements of field usage.

The Structural Properties Questionnaire

The Structural Properties Questionnaire (SPQ) was developed for the purpose of measuring structural characteristics within elementary and secondary schools. It is based on a conceptual scheme originally proposed by Jerald Hage in his Axiomatic Theory of Organizations (1965). The structural characteristics in Hage's system are the four organizational means which correspond to bureaucratic characteristics or features of Weberian bureaucratic theory. Hage identified four dimensions of organizational structure as follows:

1. Degree of centralization. This measures the decision-making dimension and thus the power distribution within the organization. Including:

a) the extent or proportion of positions that participate in decision-making at both policy and work level, and

b) the hierarchy of authority, how power is distributed among organizational positions.

2. Degree of formalization. This measures the degree of standardization and regulation. Included are:

   a) The extent or proportion of jobs that are codified (job codification and role specification), and

   b) The degree of latitude of individual discretion allowed within a particular position or organizational role.

3. Degree of Complexity. This is concerned with the level of specialization required. Included are:

   a) The number of occupational specialists.

   b) The level of professional training required.

   c) The extensiveness of professional involvement and related activities.

4. Degree of Stratification. This is concerned with the division of labor within the organization and the concomitant status system. This includes:

   a) Rate of mobility between status levels and

   b) Distribution of organizational rewards and status symbols.

From these four organizational dimensions a pool of questions was written which have been successively refined through logical and mathematical analysis to produce the present 45-item Structural Properties Questionnaire. Questions, of course, have been modified to reflect conditions in schools. The questionnaire, itself, is composed of a series of statements which describe various behaviors. Respondents are asked to characterize the statement along a simple 4-point Likert scale. Successive administrations of the 63-item Form 3 and the 45-item Form 4 (whose 45 items are a subset of the Form 3 questions) have been used in a large number of school settings. Results of these administrations have been collected and at present there are responses from teachers in the northeast, mid-west and intermountain west. The number of teachers in this response pool is something over 2700. Recent factor analysis of this pool of responses has indicated an 11 factor solution can be used to describe the

organizational characteristics of the schools as opposed to the 12-factor solution described by Murphy, George and Bishop in 1975. The solutions are essentially the same except for the reduction of the two decision making factors into a sirgle factor. Loadings in the 11-factor solution are consistent with the 12-factor solution (except for the combined factor as noted) and the percent of variance captured by the 11 factors essentially the same as that contained in the 12-factor solution. A copy of the 45-item Structural Properties Questionnaire Form 4 is included as Appendix A.

Scoring procedure used in this study was the so-called complete estimation method recommended by Nie et al (1975). In this method, factor score coefficients are derived for each of the 45 items for each of the 11 factors. Factor scores for each respondent are then computed from a linear equation which consists of the item Z scores multiplied by respective factor coefficients. In this way, all items are allowed to contribute to the factor score and suppressor of facts are captured.

For the purposes of this study a scoring program was written which computed the Z scores using item means and standard deviations derived from the 2700 plus respondents in the national sample. Factor scores, therefore, are normed on the national sample and not on the particular sample under study. The 14 schools in this study may therefore have means on given factors or individual items which deviate substantially from the national means.

The Procedure

Participants in this study were members of a class in Organizational Behavior given by the author in the Spring of 1977. There were 17 students in all representing 14 different schools in five northern Utah school district Five of the schools were senior high schools; one an adult evening school; the remainder elementary schools. During the course of this exercise the Structural Properties Questionnaire was administered to teachers in the different

schools. In all 280 teachers in the 14 schools responded to the SPQ.

The class was part of the regular school administrators certification program offered by the University of Utah. The students who participated in the course were intending to become building administrators on completion of their certification requirements. Most were serving presently as teachers, though some were serving in provisional status as administrators. In this particular class the majority of students who were serving as teachers had been identified by their respective school districts for future placement as administrators and had been advised to secure their administrative license. Thus, most all of the students, if they were not serving in administrative capacities, were at least aware that they soon would be, and probably had already begun to adopt an administrative perspective on school operations.

The class, except for the SPQ exercises, was probably much like the typical graduate course in organizational behavior given school administrators. Through reading, lecture and discussion mechanisms, the students studied the history of administrative thought (e.g., scientific management, human relations, structuralism); they examined Weberian thinking from a variety of perspectives. They were presented with the classic bureaucratic dysfunction models (March & Simon, 1958); and they examined a variety of views on the school as a formal organization. Most relevant to the structural properties perspective were Thompson (1961), Boyan (1967); Corwin (1965), Abbott (1965), and Litwak (1961).

In the SPQ exercise the students in the class were asked to engage in five separate and chronologically ordered activities. First, they were asked to describe their school in demographic terms; its size, student composition, makeup of the teaching staff, the nature of the surrounding community environment, and so forth.

Next, they were given readings which emphasized organizational structure.

Included in this list of readings were writings of Hage (1965) which had served to guide development of the Structural Properties Questionnaire. On completion of the readings a discussion was held calling attention to various ways of describing bureaucratic dimensions and focusing on the structural characteristics identified by Hage as "organizational means".

Third, members of the class were asked to describe their school in terms of the structural characteristics reflected in the SPQ. This assignment consisted of two parts. First, the students were to prepare a written description for each of the major structural dimensions, centralization, formalization and complexity. In preparation for this and the following part of this assignment they were given an overall definition of each of the primary dimensions. This included not only definitions of the primary dimensions but also examples of questions on the SPQ which operationally defined these dimensions. In the instructions the students were told to be as specific as possible and to give examples which seemed to them to be representative of behavior in their school relative to these dimensions. The second part of the third assignment had to do with estimating the outcomes of the SPQ were it given to teachers; and plotting the results on a SPQ Factor Deviance Schedule. This schedule listed the 11 factors of the SPQ developed in the latest varimax rotated factor analysis and promoted development of a profile plot which indicated the degree of deviance (in standard deviation units) for a given school from the grand mean of all schools in the SPQ norming sample. Students were instructed to indicate on this profile how much they thought their school differed from the average school on each of the 11 factors. A copy of the Factor Deviance Schedule profile worksheet is shown as Appendix B.

Students were also given a handout which described the 11 factors and told which ones should be reversed to preserve bureaucratic consistency, i.e.,

the top half represented more bureaucratic, the bottom less bureaucratic. This handout is shown as Appendix C.

During preparation for this exercise the students were also shown overhead slides which contained examples of plotted SPQ profiles derived from previous data and the meaning of those profiles was discussed. They were shown, for example, a school which represented a very high degree of centralization and formalization and that school's profile was contrasted with one showing a relatively low degree of centralization and formalization and one where there was a mixed profile.

When the student description exercises were completed and submitted students were given sufficient copies of the Structural Properties Questionnaire to administer to the teaching faculty of their schools. The responses derived from the faculty were coded, key punched and scored using the complete estimation method of scoring described elsewhere in this paper. Computer printouts were then returned to the students with mean scores for their school on demographic variables, SPQ items, and the 11 SPQ factors.

Finally, the students were instructed to plot the profile of teacher perceptions of structural properties as described by the SPQ on the Factor Deviation Schedule profile, to compare their previous estimates with the perceptions of the teaching faculty, to discuss possible reasons for differences which might exist, and lastly, to discuss changes they might make in their school organization on the basis of the data they possessed about its structural properties.

After all of the data had been submitted and analyzed by the students, it was merged by the author. Profiles were computed which reflected preliminary estimates by the students and the actual scores on the SPQ computed from the faculty responses. Written descriptions of the structural characteristics of the school provided by the students were examined for consistency with the plotted profile estimates.

Results

Demographic Comparisons. The distribution of demographic variables for the Utah schools is shown in Table 1. Two schools have been eliminated from these and all subsequent calculations. One, the adult school whose faculty makeup is very different from the other schools in the sample and is extremely small. A second elementary school was eliminated because of submission schedules and data mix-ups which made computer record formats incompatible. Thus 12 schools are reflected in the all-schools total and are listed individually. Schools ranged in size from an elementary school with 140 students to a senior high school of about 1850. Though size data are not available for all schools in the national SPQ sample it would appear that the Utah sample, while not containing the very large schools found in some of the other studies, is essentially consistent with the national data in size. In the Utah sample 55% of the respondents were male. In the national sample (with the Utah schools excluded from the calculations) about 52% of the teachers are male. Though Utah is not a tenure state, about 65% of the teachers responding from the five Utah school districts report being in a continuing contract state. The average age of the Utah respondent is 38. The average number of years taught is 12 and the average number of years in the particular school is 7. Again these data seem not to be substantially different from averages in the national sample of SPQ respondents. In terms of formal education the teachers in the Utah sample have on the average earned 37 semester hours beyond their baccalaureate degree and 31% of them hold Masters or Doctoral degrees.

Examination of the Table reveals, however, that there is extremely wide variance among Utah schools in the sample. On the distribution of teachers by sex they range from 10% to 78% male. Average age ranges from 33 to 41 and experience from 8 years to 15 years average total experience, and from 2 to 8 years on the average in the particular school. Professional training ranges

TABLE I

Demographic Data for 14 Utah Schools

	Enroll-ment	% Male	% Tenure	$\bar{X}$ Age	$\bar{X}$ Teaching Years	$\bar{X}$ Yrs in School	$\bar{X}$ Post BA Units	% MA or Doct
12 Utah Schools		55	65	38	12	7	37	31
(1) High School	800	40	39	34	8	5	33	40
(2) Elementary	600	10	33	37	11	6	20	10
(3) Elementary	140	60	67	33	8	2	27	40
(4) High School	1750	76	90	39	13	8	29	33
(5) High School	1850	78	82	35	9	7	36	46
(6) Elementary	450	18	14	41	11	7	19	24
(8) Elementary	300	18	91	41	13	6	26	9
(9) Elementary	500	33	82	41	15	8	25	8
(11) High School	1800	71	74	38	13	8	48	48
(12) Elementary	417	17	38	38	11	5	33	8
(13) High School	1582	58	31	36	11	6	60	26
(14) Elementary	205	11	67	39	13	5	33	22

from an average of 19 graduate hours to 48 to 60 and the percent with advanced degrees ranges from 9% to 48%. In general, the high schools reflect higher percentage of male teachers and those with more advanced training. The high school teachers would seem to be slightly younger than the elementary teachers with a few less years of teaching experience perhaps. On the basis of these data and examination of the data from the national sample of teachers there seems to be no reason to conclude that the Utah sample is radically different.

Examination of the written descriptions of the demographic characteristics of the school reveal that the schools in the Utah sample range from very small elementary schools experiencing a steady decline in enrollment--to large explosively growing elementary and secondary schools in counties where school district growth is among the fastest in the nation. School clients would seem to range from primarily agricultural through blue-collar to professional. School buildings range from buildings constructed within the last five years to schools built in the mid-1930s. Though there are relatively few minorities in Utah School Districts as compared to some other parts of the United States, schools in the Utah sample ranged from nearly all Caucasian to those with nearly a third being drawn from minority backgrounds.

Responses of teachers in the Utah sample were compared to item by item responses for the national sample. The Table in Appendix D shows the comparison of mean scores for the national and the Utah sample as well as the Z-scores for the Utah respondents for each of the 45 items. On certain items the Utah sample does deviate from the national mean by a considerable amount. On two items the deviation exceeds half a standard deviation unit (item 3 and item 29). Z-scores on several other items approach half a standard deviation.

On the 11 SPQ factors the 280 Utah teachers in the sample reported patterns of centralization, formalization and complexity which did differ noticeably from the national averages. The policy decisions in the Utah schools

tended to be more highly centralized than in the national sample but teachers seemed to enjoy slightly more freedom in work decisions and they were not supervised as actively as teachers elsewhere. Procedures were generally more specified in Utah schools although in the main Utah teachers were not required to submit evidence of classroom operation, e.g., lesson plans. Courses of study were more explicit and professional latitude deviated from the national norm by a small amount with teachers sensing greater latitude in general terms but less specific to efforts by their building principal to provide it. The Utah schools were generally less complex than were their national counterparts. Figure 1 shows the Utah profile in terms of deviance from the national norm by standard deviation units. The data for the Utah schools factor scores are supplied in Table 2 for the total sample and for each of the individual schools reflected. Care should be used in interpreting the total sample data because the mean scores are derived from the total responses. Because the high schools have a larger faculty their contributions to means are disproportionate. Total sample means are not means of the school means but simple means of all 280 responses.

Examination of Table 2 reveals that there is substantial variation among each of the factors among the schools. On Factor 6, Participation in Policy Decisions, the factor scores for the individual schools range from slightly below the national norm to almost 2 standard deviation units above the national norm. In general, however, on this factor the schools were consistently above national averages These schools involve the teaching faculty less in policy decisions than schools in other parts of the country.

In variation on freedom of teachers to make their own work decisions (Hierarchy of Authority-Decision making) scores ranged from .8 of a standard deviation below the national mean to nearly .8 of a standard deviation above the national norm. This would seem to indicate that teachers in these Utah

FIGURE 1

Structural Properties Questionnaire
(SPQ - Form IV)

VARIMAX ROTATED FACTOR PROFILE
Elementary and Secondary Schools

ALL SCHOOLS UTAH SAMPLE

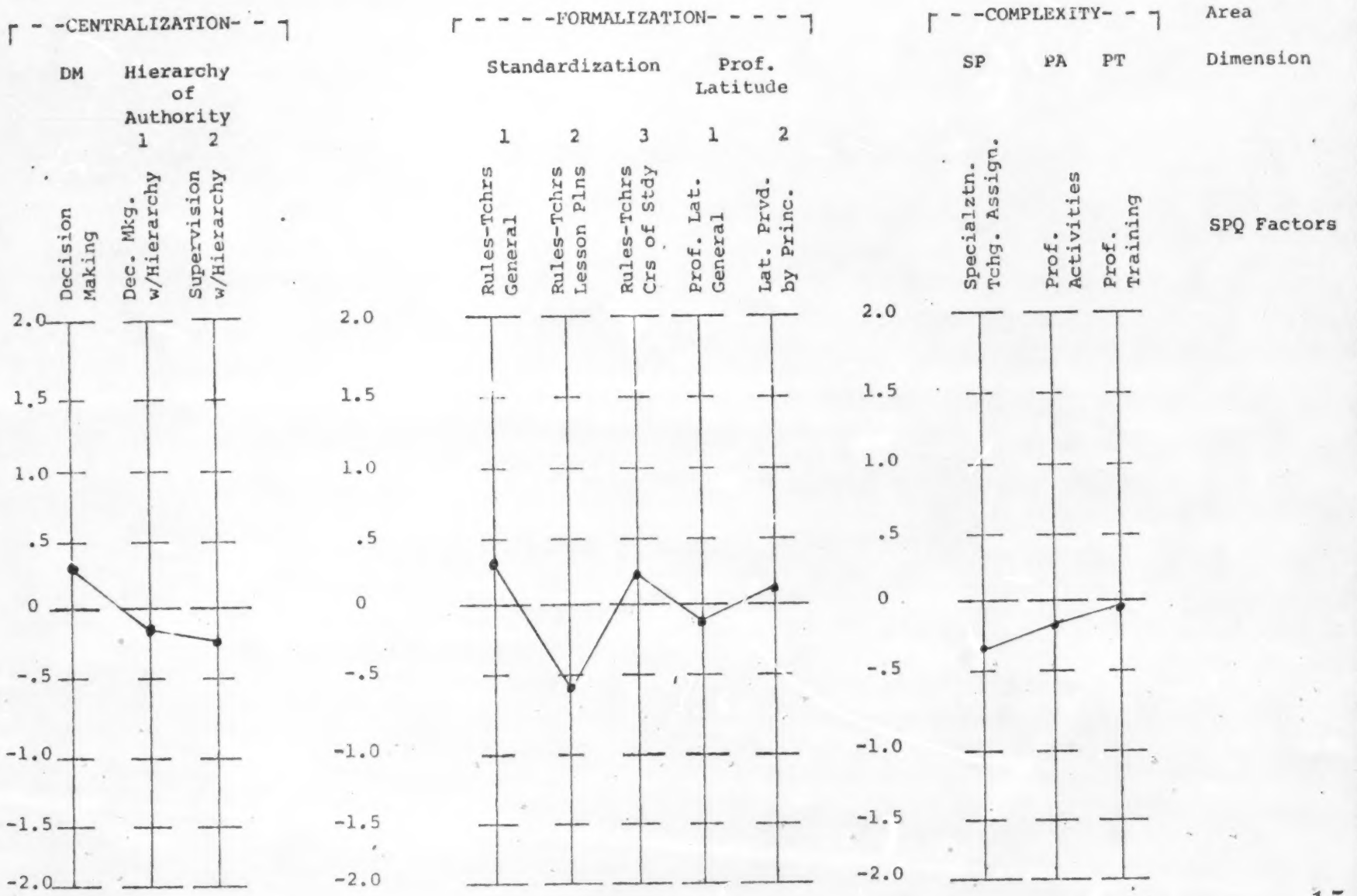

TABLE II

FACTOR SCORES EXPRESSED AS DEVIATIONS FROM NATIONAL NORM (SD = 1)

	CENTRALIZATION			FORMALIZATION					COMPLEXITY		
	6 Participation in Policy Decisions	1 Hierarchy Work Decisions	9 Hierarchy of Authority-Supervision	2 Standardization Specificity of General Rules & Regulations	10 Standardization Required Operating Procedure	11 Standardization Course of Study	3 Professional Latitude General (sign reversed)	7 Professional Latitude Provided by Principal (sign reversed)	5 Specialization in Teaching Assignment (sign reversed)	8 Professional Activities	4 Professional Training Emphasized
12 Utah Schools	.3489	-.1033	-.2228	.3383	-.5522	.2435	-.1382	.1339	-.3752	-.1883	-.0116
(1) High School	.2825	.2528	-.5205	.3009	-.7856	-.5460	-.0692	.8103	-.5695	.4538	-.1320
(2) Elementary	.2216	-.8183	-.8554	.4232	-.0177	2.065	.1925	-.1179	-1.032	-.0069	.1724
(3) Elementary	.8422	.2810	-.2424	.8478	-.1994	.5280	-.0371	.8242	-.3858	.2926	-.0023
(4) High School	.1497	-.4393	-.3183	.4205	-.8374	-.0587	-.2085	.0015	-.3954	-.1625	.2783
(5) High School	-.0271	.2204	-.4127	-.6763	-.8746	-.1037	-.3192	.2150	-1.471	-.2199	-.3685
(6) Elementary	1.276	-.1323	-.4181	.0680	.8737	.7361	-.1129	-.1776	-.5309	.0194	.3867
(8) Elementary	1.423	-.2616	-.2392	.4603	-.0313	.5804	.1370	.2383	-.5128	-.6636	.6881
(9) Elementary	1.065	-.0422	-.2938	.5223	.1265	.7191	.0351	.1562	-.6144	-.1885	.4198
(11) High School	-.0573	.0089	-.2771	.8066	-.7234	.1368	-.1506	.3217	.4351	-.2843	-.3713
(12) Elementary	1.979	.1988	-.5195	-.5679	-.3820	1.253	-.5085	-.7145	-.2131	-.0484	.1368
(13) High School	.0346	-.0269	.5578	.1974	-.9238	.0933	-.0606	.2093	-.3145	-.3964	-.3839
(14) Elementary	.6543	.7996	-.7480	1.5756	.4836	1.085	-.1341	.0964	-.5886	-.1082	-.1902

schools saw themselves working in situations ranging from relatively autonomous work decision situations to situations in which most decisions would have to be cleared with a superior. In general, teachers in Utah did not seem themselves being heavily supervised.

In terms of perceptions of general rule specificity some teachers in Utah viewed themselves as working in situations well out on the bureaucratic extreme (1.6 standard deviation units above the national norm) to situations .7 below the national norm.

Teachers were not generally required in Utah to maintain and submit lesson plans nor to communicate with their principal about classroom operating procedure they might employ. They did feel that, in general, they were more circumscribed by course of study requirements and definition than were teachers in the national sample although it should be noted in certain cases teachers reported an average perception that was substantially lower than the national average in this area. On general professional latitude the variation within the Utah sample was not as great as on the previous factors. Responses ranged from above the national mean to half a standard deviation below it on general latitude. On reports of the building administrators' attempts to increase latitude by relaxation of rules or going out of their way to allow teachers to have freedom, apparently most building administrators in Utah are less yielding than those in the national sample. At least one school, however, reported building administration behavior of .7 SD below the national mean. Low complexity scores were generally the rule although again there was considerable variation among schools on all three complexity factors.

Analysis of the written descriptions of organizational structure seem in the main to be consistent with the SPQ factor scores. For example, the student in one high school which reported a fairly high standardization score with respect to general rules and regulations (.8066) had the following to say:

> [My school] is a highly formalized school, comparatively speaking, while many schools and districts are eliminating or cutting back on formal rules and regulations, we are making adjustments but essentially holding to the status quo. Our school is somewhat unique for a larger high school in that we have a dress standard that is enforced. This dress code spells out what is considered acceptable male and female dress and grooming. The staff is also expected to adhere to this code. This, for example, requires the male faculty to wear a tie each day.

In a small elementary school which reported a high bureaucratic score on participation in policy decisions (.8422) a score on work decisions slightly above the mean and (.2810), a supervision score slightly below the national mean (-.2424) had this to say:

> The faculty will be genuinely used in deciding when, how, what and where to conduct parent-teacher conferences but they will not be part of the decision making process to decide if they will be held. The 'if question' would be settled on a higher level and the basic format and other details would be worked out with help from the staff but even these details would have general parameters that need to be considered.

With respect to work decisions, the student has this to say about this particular school,

> As an example, faculty assignments are made at the beginning of each year without much input from the teachers. This assigning involves classroom assignments, grade level, subject matter, and extra curricular activities. There are provisions for input in the form of request for assignment, etc., but the actual decision rests in the hands of the principal and other supervisors.

Teachers in this same school also report relatively high scores of standardization in general rules and regulations (.8478) and in course of study (.5280). About these the student offers this description:

> The _____district and the school have a curriculum guide. It spells out in quite a bit of detail the specifics of what is to be taught in each subject on every grade level (1-6). These are not plans, but goals/objectives to be reached each year. It is constantly updated and there is much emphasis on this guide within our school.

Elsewhere this student says:

> Minimum days are set by the school and all teachers must be here one-half hour before the bell rings and must remain one-half hour after the final bell has rung. Ties on men are a must, a woman only have been allowed to wear pants for the last four years. District and school policy on many matters is quite specific.

For the elementary school which scored most bureaucratic on decision participation (1.979) the participant in this school made the following observation in her written analysis done prior to the administration of the SPQ. "From the input I have received from the staff, the decisions are made by the principal with a few select people working occasionally with him." This same school scored quite low on the standardization items concerning general rules (-.5679) and procedures for communicating daily operation (-.3820). About this the student says, "Discipline seems to be loose with teachers doing their own thing. There seems to be some conflicts arising out of this with Mr. X and Mr. Y resolving the conflicts. Teachers are asked to make daily lesson plans but there seems to be no follow through to insure the writing or implementation of these plans."

In one high school which had a decision making participation score slightly above the national mean (.1497) and hierarchy of authority scores in work decisions (-.4393) and on supervision (-.3183) below the mean, the student reporter/analyst has this to say:

> _____school is not highly centralized in its decision making policies. Teachers are usually encouraged to requisition materials, books, and equipment whenever we feel the need. We requisition through the department chairman, who in turn must get a signature from the administration, but I've never known a request to be turned down on this level. Staff scheduling is also handled through the department, though many conflicts are worked out between the teacher and the vice-principal in charge of curriculum. Any suggestions for modification in class methods or schedule are usually accepted by the administration with a minimum of explanation. At our school the teacher is given a great deal of freedom as to what happens in his classroom. There is no interference between the office and the individual teacher. The administration may make suggestions to individual teachers, but this is never in the form of an ultimatum or an absolute rule.

Profiles containing student's estimate of factor scores and mean factor scores derived from administration of the SPQ to faculty members were analyzed with two questions in mind:

1. How accurate had the students been in estimating the factor scores?
2. What correspondence existed between the profiles of scores, i.e., did students estimates increase and decrease in proportion to increases and decreases in the actual scores from factor to factor?

To test for the accuracy of SPQ estimates made by the students compared to the scores provided by teachers the pairs of scores were categorized as to whether they were .5 units or less on the profile scale different or whether the difference was greater than .5. They were also classified as to whether or not the estimate was higher or lower than the actual score. Table 3 contains a summary of the categorizations. In general the high and low estimates seem to be about evenly distributed but more than twice as many pairs of scores (i.e., estimated and actual) were different by greater than .5 units. Other than the degree of inaccuracy there are a few apparent patterns in the Table. One which emerges, however, is the fact that the students consistently underestimated the degree of centralization operating in the organization (28 low to 8 high). On the other hand they consistently estimated the degree of complexity of their organization at being much higher than it was by SPQ measurement.

To determine whether or not the students had recognized general relative patterns among SPQ factors the actual and estimated profiles were analyzed by interconnecting the points on the various factor scales and comparing the results into profile for general parallelness. (Parallel lines would be created when the actual points on two adjacent scales and the estimated points on those same two scales varied by a constant difference.) The analysis was conducted for the three dimensions of the Structural Properties Questionnaire;

TABLE III

ACCURACY OF SPQ ESTIMATED SCORES

FACTOR	Estimate Low Dif < .5	Estimate High Dif < .5	Estimate Low Dif < .5	Estimate High Dif < .5
6 Decision Participation	2	2	8	0
1 Hierarchy of Authority - Work Rule Decisions	6	0	4	2
9 Hierarchy of Authority Supervision	1	0	7	4
2 Rules - General	0	3	3	6
10 Rules - Operating Procedures	1	7	3	1
11 Rules - Course of Study	2	2	4	4
3 Professional Lattitude - General	2	2	5	3
7 Professional Lattitude Provided by Principal	4	1	6	1
5 Specialization in Teaching Assignment	0	1	2	9
8 Professional Activities	1	3	2	6
4 Professional Training	2	1	2	7
TOTAL	21	22	46	43
TOTAL LOW OR HIGH	43		89	

Centralization, Formalization and Complexity. The results of this analysis are summarized in Table 4. In general, students were better able to relatively locate their school on the structural properties factors than they were able to do so in absolute terms, that is, they were able to recognize when their school was higher on one factor than another, but were not able to locate their estimate near the actual. Examination of the Table revelas that students were most able to detect correct patterns in the area of formalization and least able in the area of complexity. Ten of the twelve responses showed the same general pattern between predicted or estimated and actual scores for the dimension formalization. On the other hand, only two of the 12 respondents provided an estimated pattern that corresponded with the actual pattern in complexity while six or half the total provided responses which produced substantially different patterns. The results of the centralization comparison were mixed to say the least. One-third of the respondents identified the same pattern in their estimated scores, one third estimated a different pattern and one-third produced a pattern that was mixed. All in all, there were 16 patterns which were judged to be substantially the same, 11 patterns judged to be substantially different, and 9 patterns held to be mixed.

In attempting to reconcile the differences between their estimated scores and the scores provided by the teachers in the given schools the students tended to reconcile in favor of the teachers perception. In other cases they expressed perplexity at the differences between their estimates and the school means.

Discussion

It would seem from the data at hand that, even with training, administrators-in-training have considerable difficulty estimating the organizational structural characters in their particular school. In less than one-third of the responses the paired scores (i.e., estimated and actual) on the factors

TABLE IV

SPQ PROFILE COMPARISON
ESTIMATED AND ACTUAL SCORES

STRUCTURAL DIMENSION	SAME GENERAL PATTERN 1)	SUBSTANTIALLY DIFFERENT PATTERN 2)	MIXED 3)
CENTRALIZATION (SPQ Factors 6, 1, 9)	4	4	4
FORMALIZATION (SPQ Factors 2,10,11,3,7)	10	1	1
COMPLEXITY (SPQ Factors 5,8,4)	2	6	4
TOTAL	16	11	9

1) Parallel Patterns of lines inter connecting points

2) Consistently converging - diverging pattern

3) Mixed parallel and converging-diverging but 1/2 to 2/3 of connecting lines substantially parallel

were the students able to estimate the teachers mean response within a range of plus or minus .5 units on the deviance scale. This would suggest that they tend to greatly overestimate or underestimate the degree to which the factors bureaucratic presence is felt by teachers. In centralization their estimates tended to be considerably lower than the actual scores provided by the teaching faculty. This would suggest that even though their attention is focused on this factor that they tend to underestimate the degree of centralization or on the other hand to overestimate the degree to which teachers feel they are enjoying meaningful participation in both policy and work decisions which affect them. Also suggested is the fact that teachers believe that they are more completely supervised than these students thought they were.

No pattern is particularly apparent in the dimension formalization although it would appear from the data that the students tended to believe that rules were more constraining than the teachers thought they were and that also the students believed the principal to be more willing and able to provide latitude than in fact the teachers thought to be the case.

There may be several explanations for these apparent patterns. First, by virtue of the fact that each of these students in the class have already begun to identify with administration by virtue of having been identified by their relative school districts and enrolled in a program leading to administrative certification, they may be identified with the views and practices of the building administrators in their respective locations. Several of the students already are serving as assistant principals or in some other administrative or quasi-administrative position within the school. One has been appointed acting principal on a provisional assignment subject to completion of her credential. It may be that this provides a different perspective for viewing administrative behavior and the noticeable patterns of error seem to be in the overestimation of the degree to which the teachers were involved in

decisions (i.e., underestimating the centralization of decision-making) and overestimating the degree the principal was able to provide teachers with professional latitude.

Another explanation for these discrepancies may lie in the fact that the students have been cut off from the information flow that normally occurs among faculty members. It may be that other faculty members recognize that the students who have enrolled in this class are already "members of administration" and therefore reserve or withhold critical information from these folks. It may be that the information they get about these factors is filtered and hence not useful for the estimation or diagnosis of organizational procedures. It is not likely, for instance, that a teacher or a group of teachers will tell the principal or his confidants that they believe him or her to be too autocratic. It is not likely that they will openly object to decision practices in the building although they may feel them inappropriate and may among themselves wish that the principal or the district would involve them in decisions which affect their activities.

It may also be the case that the building administration treats teachers differentially, that is, some teachers may be favored by the building administration. The principal may actively consult certain members of the faculty before taking decisions but may ignore another large segment. It may be that the principal goes out of his or her way to provide professional latitude for those he/she favors. It is likely that those students who were participating in this project have been identified by existing administrators in the school district as promising. Furthermore, it is likely that these individuals have a favored position within the district and within their particular school. They are, no doubt, more actively involved in the decision and operation of the school than are other teachers.

These factors would seem to point out the great difficulties administrators

will face in attempting to estimate the structural character of their schools and attempts to plan organizational responses or to develop strategic plans for modifying the behavior within a given school. It would appear that they simply do not know what the situation is. They cannot accurately estimate it in most cases even though they have been made aware of the concepts and the items which may be used to estimate the properties in question. It seems that it is essential, therefore, that building administrators obtain some objective estimate of the bureaucratic character of their schools in order to develop some plans for how they wish to change their school or to determine whether changes may be in order. The SPQ can be helpful here.

Though the students in this experiment were able to understand how the structural properties factors scores were derived and, in retrospect, were generally in accord with teacher factor description data, they seemed to have great difficulty with the normative dimensions of this issue. When asked to devise a program to create a school with structural properties more in keeping with what they thought they should be they seemed troubled. Though they tended to turn the primary line of response to trying to lower the extreme scores above the national averages particularly those in centralization and formalization when pressed. They seemed relatively satisfied with scores that were at the national mean and somewhat proud of the scores that were below it. In general, however, other than "trying to involve teachers more in decisions" they were unable to come forth with any operational plans for reducing the scores they wished to have reduced.

This suggests that these students may identify with schools as they are presently administered, that is, they find the present practices generally acceptable and are not greatly committed to reforming these practices. Most likely, they are interested in becoming school principals, in part, because they like the role of the school principal as it is presently cast and because

they represent personality and value typings which are consistent with the present district values and practice. Thus, even though in some cases, the responses of teachers suggested that the schools in Utah were greatly more centralized in significant dimensions than other schools in the United States these individuals are not necessarily committed to a reduction of that centralization. Rather their strategy is to join those who enjoy the decision privileges of centralization. They are not committed to reforming the practice or converting the schools into say a collegial system such as Litwak (1961) proposes.

In short, it seems that even though these individuals may be provided with adequate information about the state of structural affairs from the standpoint of teachers perceptions it is not at all certain that they will use this information or are able to use this information in such a way that would lead to diminished bureaucratization within school organizations though they mouth anti-bureaucratic rhetoric. This is not to say that de-bureaucratization is necessarily good, although in light of the research on conflict between professionals and bureaucratization it would seem functional. It is to say that the individuals who go into school administration may not, in fact, be at all interested in considering this question or possibility.

Interestingly in those dimensions of organizational behavior which would correspond most closely to Weberian notions of impersonality, that is, the formalization of an organization (excluding latitude permitted by the principal) the students were much more able to identify the state of affairs. Particularly if one takes as evidence their ability to estimate correctly the patterns among the five factors that make up formalization on the Structural Properties Questionnaire. One might argue that there is much less personal commitment or career commitment to the dimension of impersonal rules and regulations and hence the students were more open to thinking about this

particular dimension though significantly none of them proposed major ways for modifying the formality in the organization. In fact, they were even less able to handle the prescriptive or strategic side of this dimension than they were the hierarchical aspects of the organization. Except as rules permit status differentials to emerge or status privilege to be practiced individuals have little stake in these rules and hence perhaps are better able to examine them. In any case most of the students knew, in a relative sense, what was going on in the formalization dimension, (i.e., among the five factors) and they were able to estimate the relative relationships of these five factors to each other.

The almost complete inability to estimate complexity may be a function of several conditions. First, these are generally small schools, nothing approaching a very large, inner-city high school is represented in this sample. The students thought their faculties to be highly skilled and trained and that those were important in assignment and training was important for assignment purposes. To the contrary, however, they reported in their written descriptions that teachers were frequently asked to teach a class or two outside of their specialized areas. This would occur, of course, in comprehensive high schools of relatively small size where it would not be possible to consistently have programs which would allow teachers to always teach their major subject.

Another problem in the estimating of complexity lies in the fact that many of these teachers have not experienced teaching outside of the state of Utah, in fact, many of them have spent their entire professional life in the same district and, in some cases, in the same school. Their view of organizational complexity as we have defined it in the Structural Properties Questionnaire is, therefore, conditioned by circumstances they know. Interestingly, those students who were able to more accurately predict the complexity patterns of their schools were teachers who had taught out of state prior to joining their present faculty.

A further aspect of this dimension probably lies in the fact that it is generally acknowledged throughout the state of Utah that appointments are often made on less than objective criteria. "Who you know" in the community may count more than what you know. This has recently been emphasized in studies we have done of principal appointments in the state of Utah.

The teaching environment in Utah is heavily conditioned by the presence of a relatively homogeneous value structure underpinned by the large majority of residents and teachers who belong to the dominant religious culture. This culture emphasizes authority and hierarchy and in fact validates bureaucratic principles and uses them extensively in its own organization. It would be perhaps unreasonable, therefore, to expect teachers coming out of this environment to advocate a radically different concept of school organization. Thus, even though the schools in Utah may appear to be more centralized or even more formalized in certain ways it is perhaps unrealistic to expect the individuals in these positions to imagine another system or to be advocates of another system. The general data for Utah would seem to support this belief. Policy decisions are generally made up in the hierarchy; general rules and regulations which govern behavior are also more prominent. On the other hand it is generally assumed that individuals will in fact carry out those rules and regulations once they are made and will be compliant to the exercise of authority. Hence, matters dealing with the behavior of individuals is generally subject to less attention in Utah than they are elsewhere. For instance, teachers and principals are somewhat less required to transmit non-routine problems upward for decision. It is assumed that the individuals will make the right decision within the general framework supplied and they are given the latitude to do so. On the other hand the profile for Utah suggests that in general people do not take advantage of this latitude. Principals, for example, do not seem to go out of their way to try to test the hierarchy which

exists outside the school. They do not exercise a representation function as far as the teachers are concerned.

Concluding Observations

In this little exercise we have tried to gather some data about how school administrators, or at least administrations in training, develop and use information about structural properties in their organization. The "subjects" in this study, students in a class on organizational behavior, were given instruction in structural analysis and were asked to describe their work organization in specific structural terms. The Structural Properties Questionnaire, an instrument designed to measure three structural dimensions of school organizations, was administered to the teaching faculty in each of the subject's schools.

Comparison of school descriptions provided by the class participants and by the SPQ revealed that, while there was some ability to recognize relative differences among specific factors, course participants were not consistently able to estimate structural levels. They were apt to miss the actual level of a given factor by a wide margin. On a few factors (Centralization - policy decisions, Formalization - general rules) there was some tendency for errors to be in one direction. That is more overestimated the degree to which teachers thought they were participants in policy decisions and overestimated the degree to which teachers thought they were regulated by impersonal rules than underestimated on these factors. Administrators, and most positional leaders for that matter, probably like to think of themselves as being "democratic". They also may well resent rules which restrict their exercise of position prerogatives. Thus in these instances they may project themselves somewhat in their estimates. (The tendency to overestimate latitude provided by the principal may also be representative of this syndrome.)

In general, however, the class participants were poor judges of the state of structural affairs in their school organization. They perceived highly bureaucratic conditions when teachers didn't. They reported decentralization when teachers saw centralization. In short they badly misread their organization more often than not.

In some ways we would expect the 17 participants in this study to be more accurate in reading structural properties than the average building administrator. Attention was focused on organizational structure through class activity. Exposure to literature emphasizing organizational structure and structural relationships was recent and concentrated. They knew about organizational structure and, presumably, were looking for it! Yet they were often way off when estimating levels under favorable conditions. Why? Is estimating the state of organizational structure terribly difficult under the best of conditions?

The results of this study would seem to suggest that administrators, left to their own means, are likely to misread the state of school organizational structure. It follows, then, that any design decisions that follow will be misguided. Principals will continue along their merry "democratic" way while teachers grumble about "those autocrats". Principals who take organizational structure seriously and have a model they wish to aim for will be frustrated. Not only won't they know where they are, organizationally speaking, but they won't know when they've got where they want to go. Pardon the metaphor, but this situation makes organizational navigation a bit rough!

On the basis of these observations, it seems the Structural Properties Questionnaire can serve a very useful diagnostic purpose. It can be a tool for gathering data about the state of structural affairs and, hence, a valuable stimulus to organizational design planning.

A Heretical Thought

This little study operated within the confines of fairly conventional thinking about administrator preparation and behavior. Implicit always is the notion that, through training, we can implant analytic skills that will lead to enlightened organizational leadership. Training, in this instance, usually means a course (or courses) in organizational behavior which stresses the theoretical and research literature on formal organizations. But "the usual" course in organizational behavior didn't help these students identify structural properties in real organizations. It didn't seem to help them decide what to do once they knew the structural state of affairs.

Serious though this finding may be, and we shouldn't yet be too alarmed given the casualness of this study, suppose that's not the worst of it. Thus far we're simply raising questions about the efficacy of organizational training. The "usual" method may not impart necessary skill.

But what if we cleaned up our act, and produced a cohort of administrators who could estimate structural properties with pinpoint accuracy? Would it make any difference in administrative practice? I'm not sure that it would. Consider for a moment the values expressed in organizational literature and the values or priorities of administrators. To take one example, the contemporary literature of formal organizations advocates decentralization. Virtually no one offers a theoretical or research argument for highly centralized operation. Even Jerald Hage, who on the surface appears matter-of-fact about structural options, suggests that high centralization impedes flexibility and innovativeness, and lowers job satisfaction. And what educator can openly opt to impede innovativeness?

Yet on the other hand if we listen to administrators and watch them behave it's clear that many believe in centralized decision-making. They talk about an administrator needing to be "decisive" and "on top of things", hardly

evidence of preference for decentralization.

Suppose we can "show" an administrator that an organization which is the way he likes it is highly centralized (read undemocratic)? What then? It may be, given our literature and methods, that at most we succeeded in increasing value dissonance. More likely we are dismissed as being wrong. After all, who believes a professor when he/she says decentralization is good. Because, you know, all professors are organizational anarchists.

Forgive me, but what will be do if we don't teach organizational behavior?

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APPENDIX A

STRUCTURAL PROPERTIES QUESTIONNAIRE

FORM 4

Lloyd K. Bishop Julius R. George Michael J. Murphy

The items in this questionnaire describe structural characteristics that may be present in your school. Please do not evaluate these characteristics in terms of being desirable or undesirable, but respond in terms of how accurately the statement describes your school.

MARKING INSTRUCTIONS

Printed below is a example of a typical item found in the questionnaire:

1. Rarely
2. Sometimes
3. Often
4. Very frequently

SAMPLE:

Teachers are required to maintain lesson plans. 1 2 3 4

In this example the respondent marked alternative 4 to indicate that most teachers in his school maintain lesson plans. Any of the other alternatives can be selected depending upon the behavior described by the item.

Please mark your response clearly on the answer sheet. Please mark every item.

Form 4

April 1975 *MAY NOT BE USED WITHOUT AUTHORS PERMISSION*

STRUCTURAL PROPERTIES QUESTIONNAIRE

FORM 4

Who has the greatest influence in decisions about:

1. The instructional program?
2. Teaching methods?
3. Textbook selection?
4. Curricular offerings?

1. Teachers
2. Department or Grade Chairmen
3. Consultants or Specialists
4. Administrators

---

5. Teachers are required to follow suggested instructional sequences and unit plans as closely as possible.
6. Principals in your district must refer most non-routine decisions to someone higher up for the final O.K.
7. Rules and regulations concerning teacher behavior are uniformly applied.
8. Days in the school calendar are allotted exclusively to teachers for professional activities.
9. Academic degrees are an important consideration in recruitment of administrative staff.
10. Teachers are required to follow an adopted course of study.
11. Vice-principals and department chairmen in your school must refer most non-routine decisions to someone higher up for a final O.K.
12. Teachers' responsibilities and lines of authority within the school are well defined.
13. Teaching in your school is a good job for someone who likes to be "his own boss."
14. Teachers receive help from an instructional media specialist in the use of audio-visual equipment.
15. Teachers make visitations to schools outside of the district.

1. Rarely
2. Sometimes
3. Often
4. Very frequently

16. Advanced degrees are an important consideration in promotion.

17. Teachers are evaluated according to a formalized procedure.

18. Even small matters often have to be referred to someone higher up for a final answer.

19. At this school, procedures for disciplining students are well defined.

20. How things are done is left up to the person doing the work.

21. Teachers attend professional conferences during the school year.

22. Academic degrees are an important consideration in recruitment of instructional staff.

23. Teachers are allowed to teach only those subjects which are included in the course-of-study.

24. There can be little action taken here until a superior approves a decision.

25. Teachers' activities are governed by written rules and regulations.

26. Most people here make their own rules on the job.

27. Teachers are required to do paper work which could be done by a school office staff.

28. Teachers are allowed to teach outside of their major area of study.

29. Teachers are required to maintain lesson plans.

30. People here are allowed to do almost as they please.

31. Teachers are allowed to teach outside of their major and minor area of study.

32. Teachers in your school must refer most non-routine decisions to someone higher up for a final O.K.

33. Administrators strictly follow established rules and regulations indealing with the teaching staff.

34. The Principal's activities are governed by written rules and regulations.

1. Rarely
2. Sometimes
3. Often
4. Very frequently

1. Rarely
2. Sometimes
3. Often
4. Very frequently

35. A Teacher can make his own decisions concerning instructional problems without checking with anybody else.

36. Teachers here teach out of their field of specialization.

37. Any decision I make has to have my superior's approval.

38. Teachers are required to submit lesson plans.

39. The Principal is willing to by-pass regulations to help teachers.

40. Teachers are required to go through channels (chain of command) for routine decisions.

41. The Principal is willing to by-pass regulations to help pupils.

42. Teachers' daily activities must have the approval of a superior.

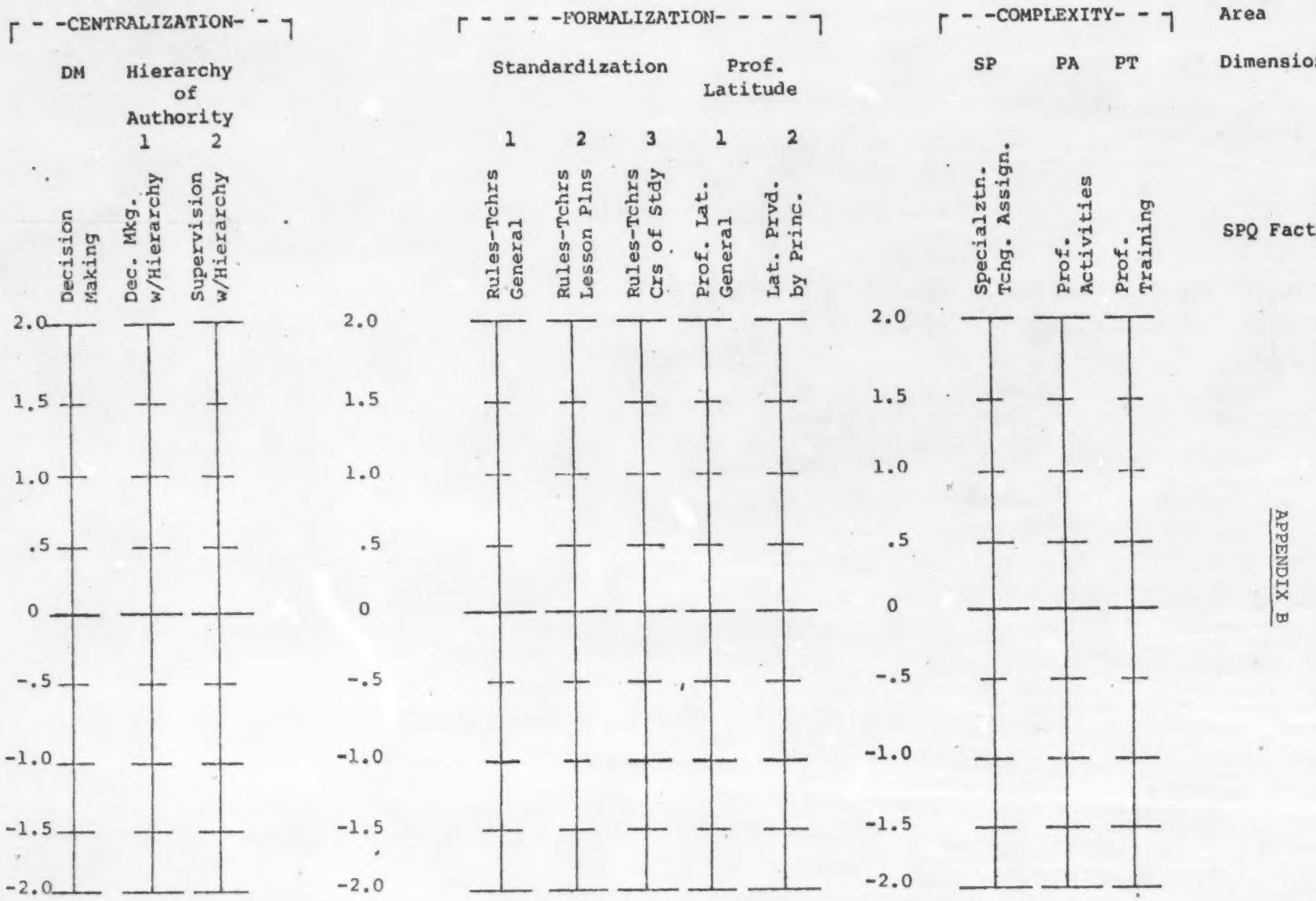
43. Teachers in this school are closely supervised.

44. Teachers are allowed to violate minor rules and regulations.

45. Rules requiring teachers to sign in and out are strictly followed.

Structural Properties Questionnaire
(SPQ - Form IV)

VARIMAX ROTATED FACTOR PROFILE
Elementary and Secondary Schools



APPENDIX B

APPENDIX C

EDUCATIONAL ADMINISTRATION 624

SPQ FACTOR PROFILE

A. DEGREE OF CENTRALIZATION (how power is distributed among social positions)

1. Participation in decision making (policy) how much occupants of various positions participate in decisions about allocation of organizational resources.

   Factor 6 (CENT - DM)

2. Hierarchy of authority (work decisions) how power is distributed among social positions--centralized/decentralized.

   a) Factor 1 (CENT - HI1)
   b) Factor 9 (CENT - HI2)

B. DEGREE OF FORMALIZATION (How rules are used in an organization)

1. Job Codification - Role specificity - Standardization the degree to which job descriptions are specified - roles are specified--standardization.

   a) Factor 2 (FORM - ST1)
   b) Factor 10 (FORM - ST2)
   c) Factor 11 (FORM - ST3)

2. Role observation--Professional Latitude degree to which job occupants are supervised--measure of latitude of behavior that is tolerated from standards.

   a) Factor 3 (FORM - LA1) Reverse factor sign
   b) Factor 7 (FORM - LA2) Reverse factor sign

C. DEGREE OF COMPLEXITY (Degree of professional activity required)

1. Degree of occupational specialization type and number of occupational specialties--specialization

   Factor 5 (COMP - SP)
   (Reverse Factor sign)

2. Professional Activity number of professional association, number of meetings attended, offices held, etc. of each occupational position.

   Factor 8 (COMP - PA)

3. Professional Training college or other professional training required for each occupational position.

   Factor 4 (COMP - PT)

APPENDIX D

SPQ ITEM	NATIONAL $\bar{X}$	UTAH $\bar{X}$	UTAH Z-Score	SPQ ITEM	NATIONAL $\bar{X}$	UTAH $\bar{X}$	UTAH Z-Score
1	2.1033	2.1522	.03851	24	2.2978	2.1341	.16630
2	1.2273	1.2671	.05817	25	2.3606	2.5704	.21301
3	1.5718	2.0365	.50593	26	2.0476	2.0975	.05532
4	2.5033	2.8178	.24442	27	2.3963	2.2043	.17186
5	2.0799	2.1971	.12037	28	1.9553	2.3345	.41437
6	2.2817	2.2088	.06831	29	2.7767	2.1429	.53656
7	2.5966	2.7572	.15934	30	1.9839	2.0468	.06895
8	2.2013	2.2362	.03275	31	1.6976	1.9820	.31608
9	2.8503	2.9061	.05644	32	2.5894	2.4460	.14289
10	2.3723	2.6595	.28617	33	2.4501	2.6272	20106
11	2.6832	2.7143	.02889	34	2.4774	2.5634	.09210
12	2.7852	2.9457	.16233	35	2.5523	2.9821	.01177
13	2.6074	2.8022	.20268	36	1.6640	1.8877	.25051
14	2.4289	2.3011	.10821	37	1.9383	1.7645	.20951
15	1.6718	1.3477	.40299	38	1.9299	1.4000	.45117
16	2.4558	2.5809	.11675	39	2.0701	1.9964	.08600
17	2.9736	2.9140	.05734	40	2.1400	2.0870	.05623
18	1.7972	1.7122	.09328	41	2 3090	2.1594	.15982
19	2.2953	2.2662	.02772	42	1.5108	1.3571	.19428
20	2.7666	3.0679	.34548	43	1.8596	1.7464	.13676
21	2.3522	2.4014	.05525	44	1.9388	1.8669	.08228
22	2.7200	2.5688	.15533	45	1.8037	1.3309	.42353
23	2.4371	2.3419	.08859				

National Sample N = 2797 Utah Sample N = 280